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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,632	07/15/2003	Wen-Chung Liu	06720.0102-00000	5661
570	7590	09/26/2006	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103			TRAN, KHANH C	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/618,632	<b>Applicant(s)</b> LIU ET AL.	
	<b>Examiner</b> Khanh Tran	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-8, 10-12 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Calderbank et al. U.S. Patent 6,115,427.

Regarding claim 1, in column 6 lines 25-67, FIG. 3 presents an illustrative apparatus of a digital wireless communication system transmitter receiving an analog speech signal from speech signal source 101, and processes this signal for transmission on antennas 116a,b. The transmitter comprises:

a source encoder 104 providing PCM digital signal representative of the analog speech signal as output to a channel encoder 106;

the channel encoder 106 coding the PCM digital signal using a conventional channel code as shown in Tables in column 6-8;

constellation mappers 108 a, b, coupled to the channel encoder 106, for mapping the first symbol of the codeword generated by the encoder 106 and the second symbol of the codeword generated by the encoder 106 in one symbol period, wherein each symbol belongs to the 4-PSK constellation presented in FIG. 4(a); see column 7 lines 10-25. In light of the aforementioned teachings, constellation mappers 108 a, b constitute the claimed mapping unit; and

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modulators 114 a, b coupled to the constellation mappers 108 a, b for modulating the first and second QPSK symbols; see column 7, lines 35-50.

Regarding claim 2, in column 4 lines 65-67, the two modulated signals are transmitted using two transmit antennas; see also FIG. 3.

Regarding claim 3, in column 7, TABLE shows the information bits being three.

Regarding claims 4-5, as recited in claim, each symbol belongs to the 4-PSK constellation presented in FIG. 4(a), which includes one of four states 0, 1, 2 and 3.

Regarding claim 6, in column 8 lines 20-67, FIG. 5 discloses a receiver 300 receiving transmitted signals from antenna 301, and producing analog speech as output. Receive buffer 307 store received symbols from front end 305. Since the receiver **receives a superposition of data** in buffers 110 a, b only one buffer is needed.

Regarding claim 7, as recited in claim 6, since the receiver **receives a superposition of data**, the received constellation combined in the air correspond to an 8-point signal constellation.

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Regarding claim 8, referring to FIG. 3, as recited in claim 1, the source encoder 104 provides PCM digital signal representative of the analog speech signal as output to the channel encoder 106.

Regarding claims 10-11, claims are rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 12, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 15, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claims 16-17, claims are rejected on the same ground as for claim 6 because of similar scope.

Regarding claim 18, claim is rejected on the same ground as for claim 1 in view of claim 3 because of similar scope.

Regarding claim 19, claim is rejected on the same ground as for claim 7 because of similar scope.

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Regarding claim 20, claim is rejected on the same ground as for claim 4 because of similar scope.

Regarding claim 21, claim is rejected on the same ground as for claim 5 because of similar scope.

Regarding claim 22, claim is rejected on the same ground as for claim 8 because of similar scope.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 13-14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calderbank et al. U.S. Patent 6,115,427 as applied to claim 1 above, and further in view of FIG. 1 admitted prior art in the original disclosure and John G. Proakis, Fourth Edition, "Digital Communications", Year 2000, pages 540-541.

Regarding claim 9, Calderbank et al. does not teach the channel encoder being a rate 1/3 turbo encoder as claimed in the application claim.

In paragraph [008] of the original disclosure, FIG. 1 admitted prior art teaches a similar system 10 including a channel encoder 14 that takes the form of a turbo encoder

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and provides a turbo coding rate of  $1/3$ . Calderbank et al. and FIG. 1 admitted prior art teach in the same field of endeavor. As recited in John G. Proakis textbook, pages 540-541, because turbo codes are known to yield performance very close to the Shannon limit with iterative decoding, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Calderbank et al. channel encoder to implement the channel encoder 14 that takes the form of a turbo encoder and provides a turbo coding rate of  $1/3$  as taught by FIG. 1 admitted prior art.

Regarding claims 13-14, claims are rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 23, claim is rejected on the same ground as for claim 9 because of similar scope.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zehavi et al. U.S. Patent 6,005,855 discloses "Method And Apparatus For Providing Variable Rate Data In Communications System Using Statistical Multiplexing".

Bevan et al. U.S. Patent 6,005,855 discloses "Space-Time Coding And Channel Estimation Scheme, Arrangement And Method".

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

*Khanh Cong Tran*

*09/24/2006*

*Primary Examiner*

*KHANH TRAN*